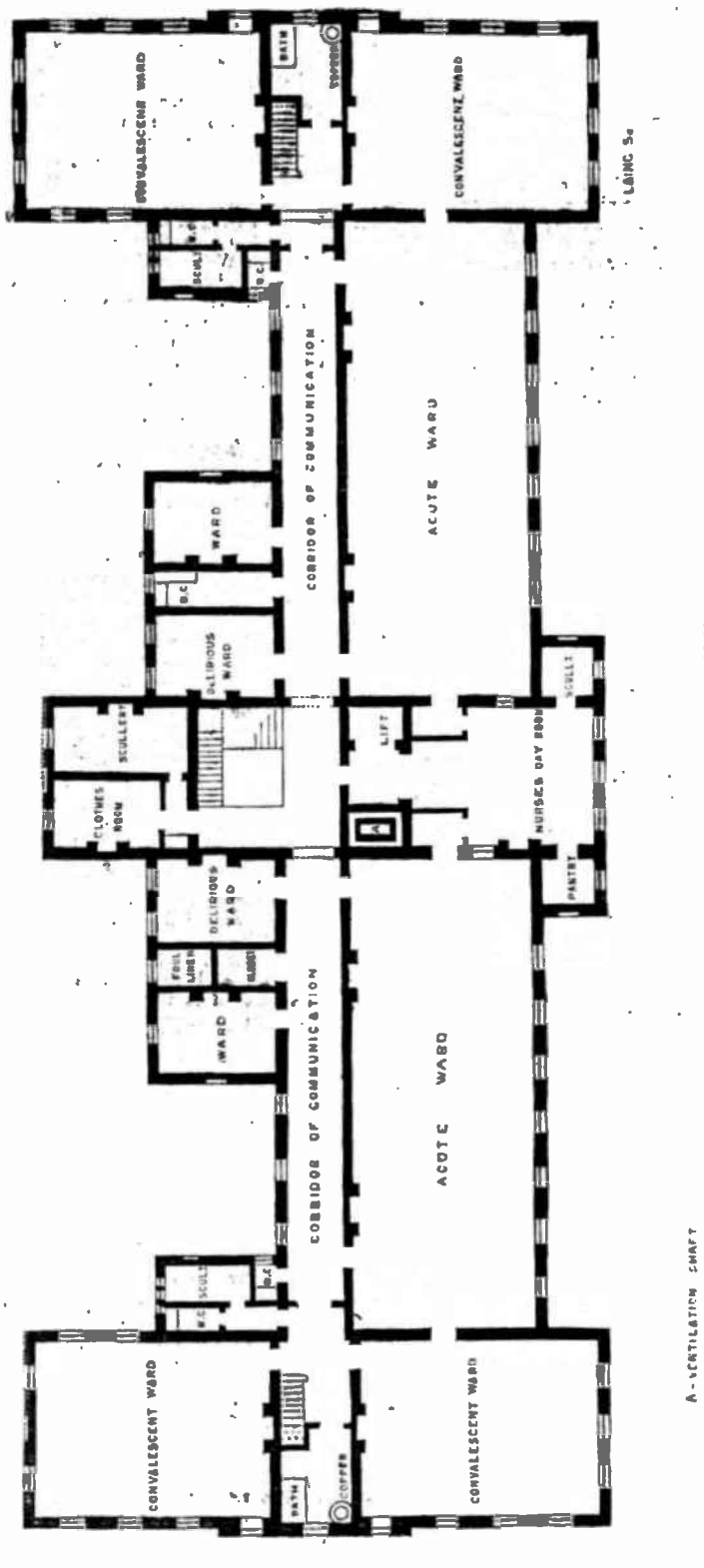

PLAN OF ONE-PAIR STORY.

NEW SMALL-POX AND VACCINATION HOSPITAL, HIGHGATE.

READERS will remember that we noticed, some time since, the plans submitted in competition for the new Small-pox Hospital, required in consequence of the Great Northern Railway Company having purchased the site of the present hospital for their terminus. A design by Mr. Daukes was selected, and we now give a view of the building as it will appear when completed, together with the plan of the one-pair story. Next week we shall give a general plan of the ground story.

The building is being erected on a very healthy and picturesque site at the foot of Highgate-hill; and will be faced with picked grey stocks, with Bath-stone dressings. The ground-floor is devoted to the residences of the officers and household purposes; the whole of the wards being provided on the upper floors. The acute wards are 17 feet in height, with windows at the back, over the corridor, for thorough ventilation, and are understood to provide a space of 2,120 cubical feet for each patient. The convalescent wards are 13 feet high.

A thorough system of warming and ventilating is to be applied to the whole building; the shaft for which forms the ornamental tower in the centre of the composition.

THE IMPROVEMENT OF CHRONOMETERS.

THE talent and ingenuity which have been directed to the improvement of chronometers for many years past, have left but few defects in their construction, excepting the imperfect compensation for change of temperature: this has formed the great object to which the efforts of persons interested in their improvement have been directed. The defect alluded to is this, that if chronometers are adjusted for extremes of heat and cold, they will gain in the intermediate temperatures. The cause of this defect is, that the balance-spring loses elasticity by an increase of temperature at an accumulating rate over the effect produced by the ordinary compensation. The great difficulty of obtaining a principle the effect of which could be increased or diminished precisely in the same degree as the temperature increased or diminished the elasticity of the spring, has perhaps occupied more time and led to more profitless experiments than any obstacle which has ever opposed itself to the progress of chronometrical improvement.

Mr. Loseby has introduced mercury to achieve the object desired, which by its fluidity seems to admit of being adjusted so that its effect varies exactly in the same proportion as the change of temperature alters the elasticity of the spring, or in other words, which makes the law of the successive alterations of the momentum of inertia adapt itself to the law of alteration of the elasticity of the spring, whatever that law may be.* Since the invention was submitted to the Government in 1843, it has undergone several trials by order of the Board of Admiralty, with a view to test its principle. The chief points which required to be proved were, first, whether the principle admitted of being adjusted to the irregular loss of elasticity in the spring; and, secondly, if the effect produced by the mercury would be sufficient. The fluidity of the agent used at once answered the first point, and it was therefore to the second that the trials have been chiefly directed. The result shews that not only can the ordinary defect be obviated, but in most of the trials it has even been reversed. The first trial commenced in January, 1845, when two chronometers were placed at the Observatory, Greenwich, under the direction of the Astronomer Royal, and underwent a rigorous ordeal, having been exposed to the open air on the north side of the building during the coldest weeks of that severe winter, and also to temperatures varying from 65 degrees to 120 degrees Fahrenheit for the extreme heat. The Astronomer Royal's report, which was laid before the Admiralty in May, contained an account of the performance of these chronometers, and also his opinion relative to the principle. The following extracts are from this report:—"I consider this invention (taking advantage very happily of the two distinguishing properties of mercury, its fluidity and its great thermal expansion) as the most ingenious that I have ever seen, and the most perfectly adaptable to the wants of chronometers. I am not aware that it is liable to any special inconvenience." "I think it my duty to report as my opinion, that Mr. Loseby's construction has successfully effected its object, and remarking the ingenuity of the method used, and the fertility of its principle, I state as my opinion to the Board of Admiralty, that Mr. Loseby is entitled to their lordships' general encouragement."

Dr. Rae says, in his report of the Arctic expedition under his command, which returned last year, that nearly two months before the temperature reached 0° Fahrenheit, the chronometer employed became so irregular in rate as to be useless for taking the longitude. This of itself shews the importance of improvement. The annual trial of chronometers for purchase by the Admiralty is now concluded for the present year: it contained forty-eight chronometers of various makers, including two of Mr. Loseby's improved construction, one of which has obtained the first, and the other the third place in the rates published by the Government for their superior merit.

We mention these facts, which seem little known beyond the Government departments, in justice to an ingenious man.

* Astronomer Royal's Report.